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An Empirical Investigation of Antecedents of Internet Abuse in the Workplace

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ABSTRACT

This study examined the extent to which employees engage in Internet abuse, and whether any of 15 antecedents predict the amount of that abuse. Data were collected from 571 Usenet users in an on-line survey. Aggregating the time for each of the eleven listed methods of Internet abuse revealed a total of 5.8 hours per week, on average. Most of the antecedents in two of the three Theory of Planned Behavior (TPB) categories (Attitudes and Subjective Norms), were significant, and none of the antecedents in the third TPB category (Perceived Behavioral Control) showed significance. addiction, self-justification, job satisfaction, peer culture, and supervisor culture were significant predictors of Internet abuse. Exploratory demographic factors computer experience, gender, and firm revenue also showed predictive power.

Keywords

Cyberloafing, Internet Abuse, Theory of Planned Behavior, Attitudes, Subjective Norms

INTRODUCTION

According to the latest government study, the personal computer has become the “hallmark of the workplace in postindustrial America” (Hipple & Kosanovich, 2003). Almost 80% of managerial and professional workers have access to a personal computer at work, and nearly 66% use the Internet at work.

The widespread use reflects many business benefits (Vogt, 1997), but the “double-edged sword” (Lim, 2002, p. 676) that is the Internet unfortunately carries with it extra “baggage” that accompanies those benefits. Several recent studies reveal much abuse of the Internet in the workplace by employees; users exchange personal e-mails, shop on line, check scores on sporting events, gamble on line, view pornographic material, and chat on instant messaging services.

In the most recent U.S. study (Colby and Parasuraman, 2002), it is estimated that employees spend between 3.7 and 6.5 hours per work week on personal Net use. Earlier studies (Lim, 2002) revealed that between 64% and 90% of U.S. workers engaged in personal activities while at work. Financial losses from this abuse have been

estimated to reach 64% of organizations, costing \$378 million in 2001 (Computer Security Institute, 2001).

In this study we place Internet abuse into a framework that examines the antecedents of that abuse, and report on a study of 571 Usenet users.

BACKGROUND

The Computer Security Institute reported that 31% of businesses said they had experienced financial losses from reduced productivity as a result of employee misuse of Internet privileges (McCollum, 1998).

Internet Access and Productivity

There are two views about the effect of Internet abuse on productivity. One asserts that productivity suffers due to wasted time, and the other takes the opposite view, stating that employees need breaks to recharge their creative potential and relax while performing their duties, leading especially to improved team-building and communication (Guthrie and Gray, 1996).

While it is difficult to pinpoint the net result of gains in creativity and restfulness pitted against potential problems such as the waste of time (McCollum, 1998), reduced bandwidth, legal exposure (Manhasset, 1997), or ethical issues (Lee et al., 2002), most researchers make the assumption that there is a net negative effect. This study attempts to examine possible antecedents of Internet abuse for greater understanding of the problem.

RESEARCH MODEL AND EXPECTATIONS

Several factors can lead to Internet abuse in the workplace. Informal discussions with workers have revealed that some are unable to spend such time because they are not interested, they are too conscientious, they are in full view of others, they are too busy, etc.

This study builds on previous research by looking at potential factors that influence Internet abuse in the workplace. According to previous studies, several candidate factors lead to Internet browsing by employees. Using the Theory of Planned Behavior (Ajzen, 2001), Lee and Lee (2002) arranged some potential factors into those relating to attitudes, subjective norms, and perceived behavioral control (see Table 1). We expanded the list of possible factors in each of the areas as described below,

and augmented this list with other exploratory factors. While this study does not test the statistical appropriateness of where each of our measures fit, we present them in this structure for greater understandability. Each will be discussed in turn.

Attitudes	Perceived Beh. Control
<ul style="list-style-type: none"> • Job satisfaction • Playfulness • Engagement • Internet Addiction • Self-Justification 	<ul style="list-style-type: none"> • Abuse Policy • Workplace Privacy • Productivity Measurement • Work Monitoring
Subjective Norms	Demographic Variables
<ul style="list-style-type: none"> • Peer Culture • Supervisor Culture 	<ul style="list-style-type: none"> • Gender • Age • Exp. with Computers • Exp. with the Internet • Size of the Firm

Table 1. Antecedents of Internet Abuse

Attitudes

In a conceptual paper, Lee and Lee (2002) identified attachment, involvement, commitment, and beliefs as several attitude factors that can be powerful determinants of employees' willingness to commit computer abuse. An empirical study by Stanton (2002) examined the relationships between several dimensions of job attitudes and the frequency of Internet use.

Several possible measures can be used to address attachment, involvement, commitment, and beliefs. We examined playfulness and engagement in this study. The first of the two variables, playfulness, was measured by adapting an instrument from Webster and Martocchio (1992). The second, related measure of engagement (Webster & Ho, 1997) is concerned with users' subjective experiences of pleasure and involvement due to their intrinsic interest. It is expected that people scoring high on the playfulness and engagement measures will generally tend to abuse the Internet to a greater degree.

In addition to those measures, we asked users if they believed they were addicted to the use of the Internet. This exploratory item was used so that we could focus on one important aspect that might go beyond playfulness and engagement (Stanton, 2002).

Job satisfaction, Stanton's (2002) main variable of interest with respect to the frequency of Internet use, presents many possibilities as an antecedent of Internet abuse. One heavily used and validated scale is the Job Satisfaction Survey (JSS) (Spector, 1997), including fringe benefits, communications, operating procedures, co-workers, pay, promotion, contingent rewards, supervision, and the nature of the work itself. Stanton's study showed that most of the dimensions seemed to follow the pattern that lower job satisfaction led to heavier Internet use, perhaps due to users' detachment with aspects of their jobs and desire to disengage by substituting other activities.

Another exploratory item was added to address self-justification of the activity (Lim, 2002). We asked users if they believed their rewards matched their efforts at work. It was expected that both addiction and feelings of inadequate rewards would lead to more Internet abuse.

Our expectations are that:

H1: Attitudinal factors affect the extent of Internet abuse:

H1a: Lower job satisfaction will promote Internet abuse.

H1b: Computer playfulness will promote Internet abuse.

H1c: Engagement will promote Internet abuse.

H1d: Internet addiction will promote Internet abuse.

H1e: Perceived inequity will promote Internet abuse.

Subjective Norms

Lee and Lee (2002) provide two subjective norms, "co-workers influence" and "seniors influence." In this study, we examine both dimensions but focus the latter on the user's supervisor. We developed items that asked if personal Internet activity was seen as appropriate by peers and by supervisors, respectively.

Subjective norms have been powerful determinants of behavior in previous studies. The organizational behavior literature has for many years shown powerful effects of norms on worker behavior (for example, Milgram, 1965). In the Marketing literature, it is well known that a consumer's expectations are influenced more by peers than any other factor (Webster, 1991). A previous study (Galletta et al., 1995) brought this to the realm of information systems by examining training in a new software package: subjects were reliably influenced to reject a new package by their peers.

H2: Subjective norms affect the extent of Internet abuse:

H2a: Supportive peer culture promotes Internet abuse.

H2b: Supportive supervisor culture promotes abuse.

Perceived Behavioral Control

The final category of TPB is perceived behavioral control, described by Lee and Lee (2002) as the perceived ease or difficulty of performing a particular task. Organizations can limit undesirable activities by imposing policies, monitoring work, placing workers in publicly-visible settings, and deploying strict productivity measurement.

Work monitoring and lack of workplace privacy are related and strong limiting mechanisms on abusive behavior. Previous studies have determined that workers will be motivated to engage in social loafing when they think that their behavior is not being monitored (Jones, 1984). Workplace privacy varies by employee, and it is expected that employees with full privacy and without monitoring of their behavior will tend to be more abusive of the Internet than employees working in full view of others and with their use monitored by a supervisor.

To our knowledge, no previous studies have addressed the potential hindering effects of productivity measurement

on Internet abuse. While it is perhaps somewhat obvious that having privacy will provide a great deal of freedom to the Internet abuser, it is more subtle to consider the measurement of worker output. Some workers have their output measured very precisely in terms of lines of code, keystrokes, or customer service call quotas. The more objective, short-term in focus, and clear the measurement of a person's productivity, the less he or she will be able to abuse the Internet, even if they are tucked away with near invisibility. Theoretical grounding for the output measurement factor can be found in the area of social psychology (Williams, et al., 1981). When people's outputs are unidentifiable, they are less motivated to perform well because they can "get away" with less work without being criticized or punished.

We created original three-item scales to address the existence of limiting factors such as policies against Internet abuse, measurement of work output, monitoring of Internet traffic, and lack of privacy. We expect that:

H3: Perceived behavioral controls hinder Internet abuse:

H3a: More restrictive policies will hinder Internet abuse.

H3b: Workplace privacy will promote Internet abuse.

H3c: Productivity measurement will hinder abuse.

H3d: Monitoring of traffic will hinder Internet abuse.

Demographic Variables

Several demographic measures were also developed, without well-formed expectations about their effects on Internet abuse. Such factors have not been examined closely, so we treated them as exploratory in this study; hypotheses are stated in null form:

H4: Demographic factors will not affect Internet abuse:

H4a: Gender will not affect Internet abuse.

H4b: Age will not affect Internet abuse.

H4c: Computer experience will not affect Internet abuse.

H4d: Internet experience will not affect Internet abuse.

H4e: Firm size will not affect Internet abuse.

PROCEDURE

All of the items described above were assembled into an on-line instrument that contained 106 items. Completion of the entire instrument required about 15-20 minutes.

A short invitation to participate in the study was sent to a large number of Usenet newsgroups. It was difficult to determine the exact number of newsgroups; however, it is estimated that about 3,000 messages were placed.

Over a period of a week, 835 completed surveys were received. In our data set, however, we found many incomplete or otherwise unusable entries. Two judges reviewed the entries separately and flagged all that should be removed. Pooling the results, we deleted 264 entries, the union of the two lists, for a final sample size of 571.

Our sample provides for a useful test of our list of antecedents for several reasons. First, tapping only Usenet

provides a set of users that is quite homogeneous, limiting the error variance in our analysis. Also, Usenet users have specialized interest, knowledge, and experience that is not shared by most Internet users, and we expected a substantial number of serious respondents.

RESULTS

Analysis of the demographic information revealed a highly experienced group (age=40.2; experience=17.8 yrs.). Company revenues of the respondents varied widely, with 24% of subjects indicating revenues of less than \$50 million, and 23% of subjects over \$601 million.

The majority of subjects, 71.8% reported using their computer at a private desk or cubicle, while 19.3% reported usage in a public location or with access to the computer shared with several employees. Others reported usage in a location highly visible to others (4.9%) such as in a large office with several desks, while 3.9% reported usage at home. Computers were connected via a high speed Local Area Network in most of the cases (87.7 %). Respondents used their computers, on average, 27.7 hours per week, with Internet usage being less than one hour.

When respondents were asked to estimate the amount of such abuse directly as one number, the average was 4.8 hours per week (see Table 2). In contrast, when asked to estimate each of several categories of Internet abuse, the total is instead 5.8 hours per week. To provide a more complete picture, we chose to also ask how much non-Internet personal time was spent at work, and the estimate was 4.6 hours. Although it is possible that this is also an underestimate, the total amount of personal time reported is 10.4 hours per week, or fully 25% of all work time.

Abuse Activity	Mean hours Per Week (standard deviation)
Non-Internet personal matters at work *	4.6 (7.5)
Estimated Total Internet Abuse	4.8 (5.8)
Summed Total of all categories below	5.8 (6.6)
- Personal communications (including e-mail)	1.7 (2.3)
- Shopping	.3 (.8)
- Selling	.1 (.6)
- Finance and Investing	.3 (.8)
- News	1.0 (1.8)
- Travel	.1 (.4)
- Adult	.1 (.6)
- Nonessential computer maintenance	.5 (.8)
- Hobbies	1.1 (2.3)
- Entertainment	.6 (1.5)
- Self-Education	.01 (.3)

*Examples given to subjects included personal phone calls, chatting about personal matters, napping, and playing golf.

Table 2: Self-Reports of Internet (and other) Abuse

Reliability Analysis

To measure the independent variables, scales were constructed by averaging the scores on individual items. The scale with lowest reliability, privacy, only reached an alpha score of .65 and was dropped from further analysis. Future research should examine the privacy issue in more detail, and perhaps develop a more reliable instrument.

All other multiple-item scales displayed adequate levels of reliability immediately or reached it after dropping an item (if the initial reliability was below .8).

Multicollinearity Analysis

All independent variables were intercorrelated in preparation for our regression analysis. There was surprisingly little evidence of multicollinearity, as all correlations were well below the generally-accepted .6 level. The two highest correlations were -.546 between supervisor and policy, and .544 between peer culture and supervisor culture. Only two fell between .4 and .5, and all others were well below .4. Even more assuring were the VIF scores in the regression analysis described below; the highest VIF score was 1.8, well below the common threshold of 10 for regular regression and 2.5 for weaker models such as logistic regression.

Regression Results

Regression was used to determine which factors are the most important. Out of the fifteen items shown earlier (with Workplace Privacy excluded), eight were significant in the regression equation as follows. Table 3 presents the regression results.

Item	Standardized Beta	Significance
Peer culture (low=restrictive)	.178	.003
Addiction	.154	.003
Computer Experience	-.211	.000
Supervisor culture (low=restrictive)	.152	.013
Self-justification (low=surplus)	-.212	.000
Job Satisfaction	-.191	.002
Gender (0=F; 1=M)	.126	.017
Revenue	-.107	.038

Table 3. Results of Regression on Total Amount of Internet Abuse – Variables That Entered

The regression equation's adjusted R^2 is .192; nearly 20% of the variance in Internet abuse can be explained by the set of antecedents. Variables that did not enter the equation are playfulness and engagement in the attitudes group, age and Internet experience in the demographic group, and the entire perceived behavioral control group, including abuse policy, productivity measurement, and work monitoring.

There were no surprises with the directionality of any of the coefficients with the exception of self-justification. It was originally expected that employees would behave

according to the "ledger" described by Lim (2002). In retrospect, it is possible that employees in our sample with more feelings of surplus have higher levels of freedom and privileges, and are more able to get their own way. Our speculation requires additional research before this explanation can be taken seriously.

Items without previously-held expectations include gender, revenue, and computer experience, which show explanatory power in the model. Males, computer novices, and employees in small firms are more likely to abuse the Internet than females, more experienced employees, and those in large firms.

Although it is difficult (and perhaps dangerous) to speculate why males commit more Internet abuse than females, the other two demographic factors invite speculation. Employees with less computer experience might be undergoing a temporary "infatuation" while those with more experience have already gotten satiated in the past. In smaller firms, there might be less formality and wider latitude of behavior. It is possible that there are fewer peers or supervisors present, and therefore no consistent source of subjective norms.

Finally, it was puzzling to see the failure of all of the items of TPB Perceived Behavioral Control to provide any significant explanation of the extent to which respondents reported Internet abuse. Regarding policy, it is possible that policies not only lack legal grounding (Siau et al., 2002), they also lack behavioral grounding. The study by Lim et al. (2002) indicates that only 60% of employees accept usage policies.

The failure of productivity measurement and work monitoring to provide explanatory power are more difficult to explain. Both variables were normal and exhibited a wide range, so a lopsided distribution or a restricted range cannot account for the failure. Perhaps the items need to be adjusted in further studies. Table 4 summarizes the results.

CONCLUSION

This study attempted to examine the extent to which employees engage in Internet abuse, and whether any of fifteen antecedents show a significant relationship with the amount of Internet abuse. Data were collected from a sample of 571 Usenet users, using an online survey.

An aggregated total of 5.8 hours of self-reported Internet abuse was reported plus a 4.6 hour estimate of non-Internet personal time at work. The total is 10.4 hours per week on personal tasks, or 25% of a 40-hour work week.

Examining the antecedents in a regression analysis revealed that most of the antecedents in two of the three Theory of Planned Behavior (TPB) categories (Attitudes and Subjective Norms), were significant, and none of the antecedents in the third TPB category (Perceived Behavioral Control) showed significance.

Attitudes	
H1a: Job Satisfaction limits abuse	Supported
H1b: Playfulness promotes abuse	Not supported
H1c: Engagement promotes abuse	Not supported
H1d: Internet Addiction promotes abuse	Supported
H1e: Self-Justification – inequity promotes abuse	Not supported (Reverse)
Subjective Norms	
H2a: Supportive Peer Culture promotes abuse	Supported
H2b: Supportive Supervisor Culture promotes abuse	Supported
Perceived Behavioral Control	
H3a: Abuse Policy limits abuse	Not supported
H3b: Workplace Privacy promotes abuse	Not supported
H3c: Productivity Measurement limits abuse	Not supported
H3d: Work Monitoring limits abuse	Not supported
Demographic Variables	
H4a: Gender	Entered the model
H4b: Age	Did not enter
H4c: Experience with Computers	Entered the model
H4d: Experience with the Internet	Did not enter
H4e: Size of the Firm	Entered the model

Table 4 – Results of Hypothesis Testing

The issue of Internet abuse in the workplace is only beginning to be investigated. By examining the factors that lead to increased abuse, researchers and managers might better understand the phenomenon and its antecedents. It appears that policies and other restrictive practices fail to restrict Internet abuse, and perhaps it would be more effective to try and foster a culture that does not support the practice. Better understanding of the Internet abuse phenomenon that this and future studies will help provide, might eventually help the workplace become a more productive and creative work environment.

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